

1 1.(original) A pharmaceutical composition for treating osteoporosis comprising at least one
2 zwitterionic phospholipid and at least one bisphosphonate.

1 2.(original) The composition of claim 1, wherein the zwitterionic phospholipid is present in an
2 amount sufficient to reduce GI toxicity of the bisphosphonate and the bisphosphonate is present in
3 an amount sufficient to reduce bone resorption.

1 3.(original) The composition of claim 1, wherein the zwitterionic phospholipid is present in an
2 amount sufficient to reduce GI toxicity of the bisphosphonate and improve bisphosphonate bio-
3 availability when the composition is taken with food and the bisphosphonate is present in an amount
4 sufficient to reduce bone resorption, increase in bone density and/or reduce bone fractures.

1 4.(original) The composition of claim 3, wherein the amount of bisphosphonate is between about
2 0.1 mg per dose and about 1000 mg per dose and a ratio of bisphosphonate to zwitterionic
3 phospholipid is between about 1:0.1 and about 1:100.

1 5.(original) The composition of claim 3, wherein the amount of bisphosphonate is between about
2 1 mg per dose and about 500 mg per dose and a ratio of bisphosphonate to zwitterionic phospholipid
3 is between about 1:0.5 and about 1:50.

1 6.(original) The composition of claim 3, wherein the amount of bisphosphonate is between about
2 2 mg per dose and about 50 mg per dose and a ratio of bisphosphonate to zwitterionic phospholipid
3 is between about 1:1 and about 1:10.

1 7.(original) The composition of claim 3, wherein the amount of bisphosphonate is between about
2 2 mg per dose and about 20 mg per dose and a ratio of bisphosphonate to zwitterionic phospholipid
3 is between about 1:1 and about 1:5.

1 8.(original) The composition of claim 1, wherein the zwitterionic phospholipid is present in an
2 amount sufficient to reduce GI toxicity of the bisphosphonate and the bisphosphonate is present in
3 an amount sufficient to reduce bone resorption, increase in bone density and/or reduce bone

1 fractures.

1 9.(original) The composition of claim 8, wherein the bisphosphonate is present in an amount
2 between about 0.1 mg per dose and about 1000 mg per dose and a ratio of bisphosphonate to
3 zwitterionic phospholipid is between about 1:0.1 and about 1:100.

1 10.(original) The composition of claim 8, wherein the bisphosphonate is present in an amount
2 between about 1 mg per dose and about 500 mg per dose and a ratio of bisphosphonate to
3 zwitterionic phospholipid is between about 1:0.5 and about 1:50.

1 11.(original) The composition of claim 8, wherein the bisphosphonate is present in an amount
2 between about 2 mg per dose and about 50 mg per dose and a ratio of bisphosphonate to zwitterionic
3 phospholipid is between about 1:1 and about 1:10.

1 12.(original) The composition of claim 8, wherein the bisphosphonate is present in an amount
2 between about 2 mg per dose and about 20 mg per dose and a ratio of bisphosphonate to zwitterionic
3 phospholipid is between about 1:1 and about 1:5.

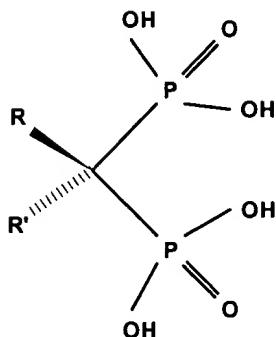
1 13.(original) The composition of claim 1, wherein the zwitterionic phospholipid increases the bio-
2 availability of the bisphosphonate from about 2 to about 20 fold.

1 14.(original) The composition of claim 1, wherein the bisphosphonate is in its zwitterionic form
2 and forms an ionic association complex with the zwitterionic phospholipid.

1 15.(original) The composition of claim 1, further comprising a colloidal metal, a metal complex
2 or a mixture or combination thereof.

1 16.(original) The composition of claim 1, wherein the bisphosphonate is characterized by the
2 general formula (I):

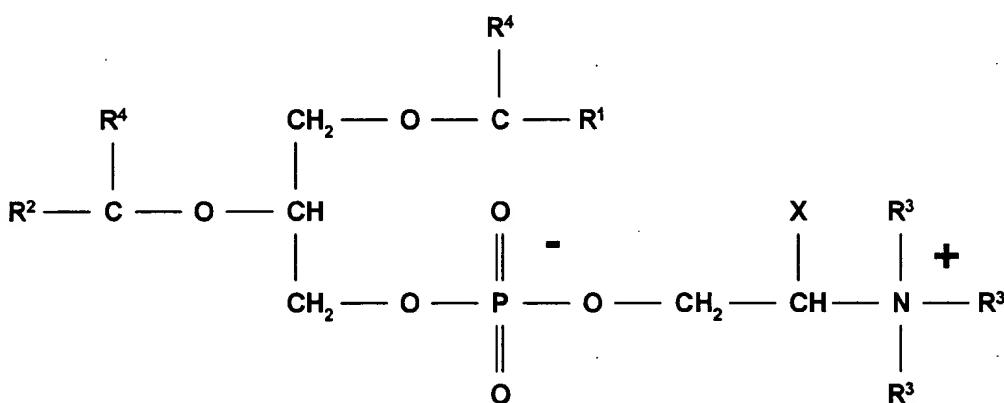
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6 (I)



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11 where R' is H, OH or Cl and R is: (a) an alkyl group having 1 to 6 carbon atoms, optionally
12 substituted with amino, alkylamino, dialkylamino or heterocyclyl, where the alkyl groups in
13 alkylamino and dialkylamino substituents have 1 to 5 carbon atoms and are the same or different in
14 the case of the dialkylamino substituted alkyl groups; (b) a halogen; (c) an arylthio, preferably
15 chlorosubstituted; (d) a cycloalkylamino having 5 to 7 carbon atoms; or (e) a saturated five or six
16 membered nitrogen containing heterocyclyl having 1 or 2 heteroatoms.

1 17.(original) The composition of claim 1, wherein the phospholipid is characterized by the of
2 general formula (II):

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6
7 (II)



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11 where R₁ and R₂ are saturated or unsaturated substitutions ranging from 8 to 32 carbon atoms; R₃ is
12 H or CH₃, and X is H or COOH; and R₄ is =O or H₂.

1 18.(original) The composition of claim 1, wherein the bisphosphonate is selected from the group

1 consisting of 3-amino-1-hydroxypropylidene-1,1-bisphosphonic acid (pamidronate), 4-amino-1-
2 hydroxybutylidene-1,1-bisphosphonic acid (alendronate), N,N-dimethyl-3-amino-1-
3 hydroxypropylidene-1,1-bisphosphonic acid (mildronate, olpadronate), I-hydroxy-3-(N-methyl-N-
4 pentylamino) propylidene-1,(N-methyl-N-pentylamino) propylidene-1, 1-bisphosphonic acid
5 (ibandronate), I-hydroxy-2-(3-pyridyl) ethylidene-1,(3-pyridyl) ethylidene-1, 1-bisphosphonic acid
6 (risedronate), 1-hydroxyethylidene-1,1-bisphosphonic acid (etidronate), 1-hydroxy-3-(1-pyrrolidinyl)
7 propylidene-1,1-bisphosphonic acid, 1-hydroxy-2- (1-imidazolyl) etylidene-1, 1-bisphosphonic(1-
8 imidazolyl) etylidene-1, 1-bisphosphonic acid (zoledronate), 1-hydroxy-2- (imidazo [1,2-a] pyridin-
9 3-yl) ethylidene-1,1-bisphosphonic acid (minodronate), 1- (4-chlorophenylthio) methylidene-1, 1-
10 bisphosphonic acid (tiludronate), 1- (cycloheptylamino) methylidene-1,1-bisphosphonic acid
11 (cimadronate, incadronate), 6-amino-1-hydroxyhexylidene-1,1-bisphosphonic acid (neridronate) and
12 pharmaceutically acceptable salts thereof and mixtures and combinations thereof.

1 19.(original) The composition of claim 1, wherein the bisphosphonate is selected from the group
2 consisting of risedronate, alendronate, pamidronate and their pharmaceutically acceptable salts and
3 mixtures and combinations thereof.

1 20.(original) The composition of claim 1, wherein the zwitterionic phospholipid is selected from
2 the group consisting of phosphatidyl cholines, phosphatidyl ethanolamines, phosphatidylinositol,
3 phosphatidyl serines sphingomyelin or other ceramides, phospholipid containing oils, and mixtures
4 and combination thereof.

1 21.(original) The composition of claim 1, wherein the zwitterionic phospholipid is selected from
2 the group consisting of phosphatidyl choline (PC), dipalmitoylphosphatidylcholine (DPPC), other
3 disaturated phosphatidyl cholines, lecithin oils and mixture and combinations thereof.

1 22.(original) A pharmaceutical composition, for treating osteoporosis, comprising a
2 pharmaceutically effective amount of a bisphosphonate to reduce bone resorption and a sufficient
3 amount of a zwitterionic phospholipid to reduce GI toxicity and increase the bio-availability of the
4 bisphosphonate.

1 23.(original) The composition of claim 22, the effective amount of the bisphosphonate comprises
2 between about 0.1 mg per dose and about 1000 mg per dose and the sufficient amount of zwitterionic
3 phospholipid is such that a ratio of bisphosphonate to zwitterionic phospholipid is between about
4 1:0.1 and about 1:100.

1 24.(original) The composition of claim 22, further comprising a colloidal metal, a metal complex
2 or mixtures or combinations thereof.

1 25.(original) A pharmaceutical composition comprising a carrier, a pharmaceutically effective
2 amount of a bisphosphonate to reduce bone resorption and a sufficient amount of a zwitterionic
3 phospholipid to reduce GI toxicity and increase the bio-availability of the bisphosphonate, where the
4 phospholipid is in its zwitterionic form and the bisphosphonate is in its zwitterionic form.

1 26.(original) The composition of claim 25, wherein effective amount of the bisphosphonate is
2 between about 0.1 mg per dose and about 1000 mg per dose and the sufficient amount of zwitterionic
3 phospholipid is such that a ratio of bisphosphonate to zwitterionic phospholipid is between about
4 1:0.1 and about 1:100.

1 27.(original) The composition of claim 25, further comprising a colloidal metal, a metal
2 complex or mixtures or combinations thereof.

1 28.(original) The composition of claim 25, wherein the medication is to be taken orally.

1 29.(original) The medication of claim 25, wherein the medication is to be taken orally with food.

1 30.(original) An oral medication for treating osteoporosis comprising an solid object comprising
2 an inert carrier, a pharmaceutically effective amount a bisphosphonate to reduce bone resorption and
3 an amount of a zwitterionic phospholipid sufficient to reduce GI toxicity and increase the bio-
4 availability of the bisphosphonate.

1 **31.(original)** The medicament of claim 30, wherein the effective amount of the bisphosphonate is
2 between about 0.1 mg per dose and about 1000 mg per dose and the sufficient amount of zwitterionic
3 phospholipid is such that a ratio of bisphosphonate to zwitterionic phospholipid is between about
4 1:0.1 and about 1:100.

1 **32.(original)** The medicament of claim 30, further comprising a colloidal metal, a metal complex
2 or a mixture or combination thereof.

1 **33.(withdrawn)**

1 **34.(withdrawn)**

1 **35.(withdrawn)**

1 **36.(withdrawn)**

1 **37.(withdrawn)**

1 **38.(withdrawn)**

1 **39.(withdrawn)**

1 **40.(withdrawn)**

1 **41.(withdrawn)**

1 **42.(withdrawn)**

1 **43.(withdrawn)**

1 **44.(withdrawn)**

1 **45.(withdrawn)**

1 **46.(previously added)** A pharmaceutical composition for treating osteoporosis comprising
2 at least one zwitterionic phospholipid and at least one bisphosphonate, where the phospholipid is in
3 its zwitterionic form and the bisphosphonate is in its zwitterionic form.

1 **47.(previously added)** A pharmaceutical composition, for treating osteoporosis, comprising
2 a pharmaceutically effective amount of a bisphosphonate to reduce bone resorption and a sufficient
3 amount of a zwitterionic phospholipid to reduce GI toxicity and increase the bio-availability of the
4 bisphosphonate, where the phospholipid is in its zwitterionic form and the bisphosphonate is in its
5 zwitterionic form.

1 **48.(previously added)** An oral medication for treating osteoporosis comprising an solid object
2 comprising an inert carrier, a pharmaceutically effective amount a bisphosphonate to reduce bone
3 resorption and an amount of a zwitterionic phospholipid sufficient to reduce GI toxicity and increase
4 the bio-availability of the bisphosphonate, where the phospholipid is in its zwitterionic form and the
5 bisphosphonate is in its zwitterionic form.